Service instructions

Hydro MPC

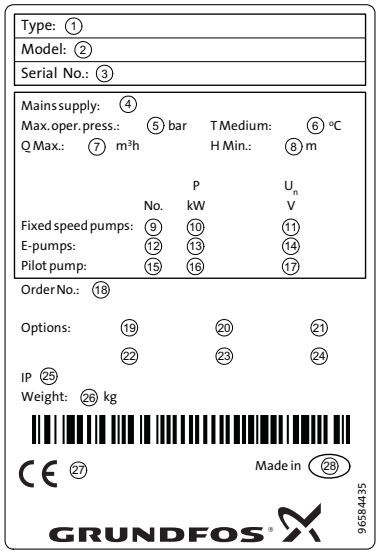
1. Type identification 2
1.1 Nameplate 2
1.2 Nameplate, IO 351 3
1.3 Nameplate, CU 351 4
1.4 Configuration file label 5
2. Technical data 6
2.1 Pressure 6
2.2 Temperature 6
2.3 Relative humidity 6
2.4 Sound pressure 6
3. CU 351 and IO 351 7
3.1 Functions of terminals, CU 351 7
3.2 Functions of terminals, IO 351A and IO 351B 8
4. Fault correction tools 27
4.1 MPC/CU 351 LEDs and alarm relay 27
4.2 MPC display 27
4.3 R100 32
4.4 PC Tool E-products 34
5. Factory configuration of Hydro MPC 35
5.1 Necessary equipment 35
5.2 Factory configuration of Hydro MPC 35
6. Danfoss frequency converters 47
7. CUE 47
8. MGE 47

1. Type identification

This section show the type key, the nameplate and the codes that can appear in the variant code.

Note ***As codes can be combined, a code position may contain more than one code (letter).***

1.1 Nameplate



TM03 1741 3105

Fig. 1 Nameplate, booster system

Pos.	Description
1	Type designation
2	Model
3	Serial number
4	Supply voltage
5	Maximum operating pressure in bar
6	Liquid temperature in °C
7	Maximum flow rate in m^3/h
8	Minimum head in metres
9	Number of mains-operated pumps
10	Motor power in kW for mains-operated pumps
11	Nominal voltage in V for mains-operated pumps
12	Number of pumps with frequency converter

Pos.	Description
13	Motor power in kW for pumps with frequency converter
14	Nominal voltage in V for pumps with frequency converter
15	Number of pilot pumps
16	Motor power in kW for pilot pump
17	Nominal voltage in V for pilot pump
18	Order number
19-24	Options
25	Enclosure class
26	Weight in kg
27	CE-mark
28	Country of origin

Type key

Example	Hydro MPC	-E	/G	/NS	3 CRIE 5-8	(*	3x380-415 V, 50/60Hz, N, PE

Type range

Subgroups:
Pumps with integrated frequency converter (0.37-22 kW) - one per pump: -E
Pumps with Grundfos CUE frequency converter (30 kW and above) - one per pump: -E
Pumps with external Grundfos CUE frequency converter: -F
Mains-operated pumps (start/stop): -S

Manifold material:
: Stainless steel
/G : Galvanised steel
/OM: Other materials

Suction manifold:
: With suction manifold
/NS: Without suction manifold

Number of pumps with integrated frequency converter and pump type

Number of mains-operated pumps and pump type

Supply voltage, frequency

(* Code for custom-built solution.

1.2 Nameplate, IO 351

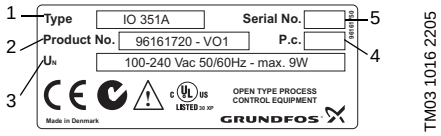


Fig. 2 Nameplate, IO 351A

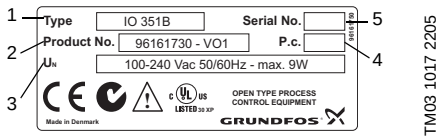


Fig. 3 Nameplate, IO 351B

Pos.	Description
1	Type designation
2	Product/version number
3	Permissible supply voltage, frequency and maximum power consumption
4	Production code (year, week)
5	Serial number

Type key

Code	Meaning	IO	3	5	1	B

IO: Input-output unit

35: Controller series

1: Model number

A: For pumps with fixed speed

B: For pumps with fixed speed and pumps in F-systems controlled by external frequency converters or the CUE, or as input-output module

1.3 Nameplate, CU 351

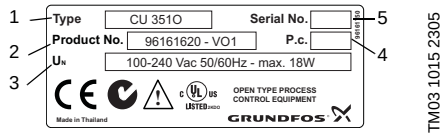


Fig. 4 Nameplate, CU 351

Pos.	Description
1	Type designation
2	Product number
3	Rated voltage, frequency and power
4	Production code (year, week)
5	Serial number

Type key

Code	Meaning	CU	3	5	1	O
CU	Control unit					
35	Controller series					
1	Model number					
O	For panel mounting					

1.4 Configuration file label

The configuration label shows the configuration file numbers programmed in the CU 351.
See section 5. Factory configuration of Hydro MPC.

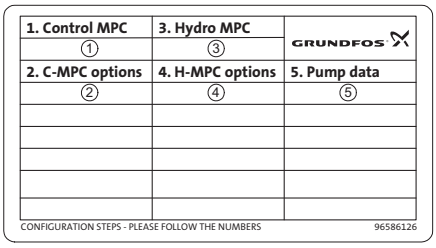


Fig. 5 Configuration file label

Pos.	Description
1	Control MPC - GSC file
2	Control MPC options - GSC files
3	Hydro MPC - GSC file
4	Hydro MPC options - GSC files
5	Pump data - GSC files

Note ***A GSC (Grundfos Standard Configuration) file is a configuration data file.***

2. Technical data

2.1 Pressure

Inlet pressure

Hydro MPC booster systems can operate with a positive inlet pressure (precharged pressure system) or with a negative inlet pressure (i.e vacuum at the inlet manifold).

Calculation of the inlet pressure is recommended in these cases:

- Water is drawn through long pipes.
- Water is drawn from depths.
- Inlet conditions are poor.

Note ***In this manual, the term 'inlet pressure' is defined as the pressure/vacuum which can be measured immediately before the booster system.***

To avoid cavitation, make sure that there is a minimum inlet pressure on the suction side of the booster system. The minimum inlet pressure in bar can be calculated as follows:

$$p_s > H_v + \rho \times g \times 10^{-5} \times NPSH + H_s - p_b$$

p_s	=	The required minimum inlet pressure in bar read from a pressure gauge on the suction side of the booster system.
H_v	=	Vapour pressure of the pumped liquid in bar.
p	=	Density of the pumped liquid in kg/m^3.
g	=	Gravitational acceleration in m/s^2.
NPSH	=	**N**et **P**ositive **S**uction **H**ead in metres head. NPSH can be read from the NPSH curve at the maximum performance at which the pump will run. (See installation and operating instructions for CR, CRI, CRN.)
H_s	=	Safety margin = minimum 0.1 bar.
p_b	=	Barometric pressure in bar. Normal barometric pressure is 1.013 bar.

Maximum inlet pressure

See the CR, CRI, CRN installation and operating instructions (96462123) delivered together with this booster system.

Operating pressure

As standard, the maximum operating pressure is 16 bar.

On request, Grundfos offers Hydro MPC booster systems with a maximum operating pressure higher than 16 bar.

2.2 Temperature

Liquid temperature: 0 °C to +70 °C

Ambient temperature: 0 °C to +40 °C

2.3 Relative humidity

Max. relative humidity: 95 %

2.4 Sound pressure

For sound pressure level, see the installation and operating instructions for the CR pumps.

The sound pressure level for a number of pumps can be calculated as follows:

$L_{max.}$	=	L_{pump} + (n – 1) x 3.
$L_{max.}$	=	Maximum sound pressure level.
L_{pump}	=	Sound pressure level for one pump.
n	=	Number of pumps.

3. CU 351 and IO 351

3.1 Functions of terminals, CU 351

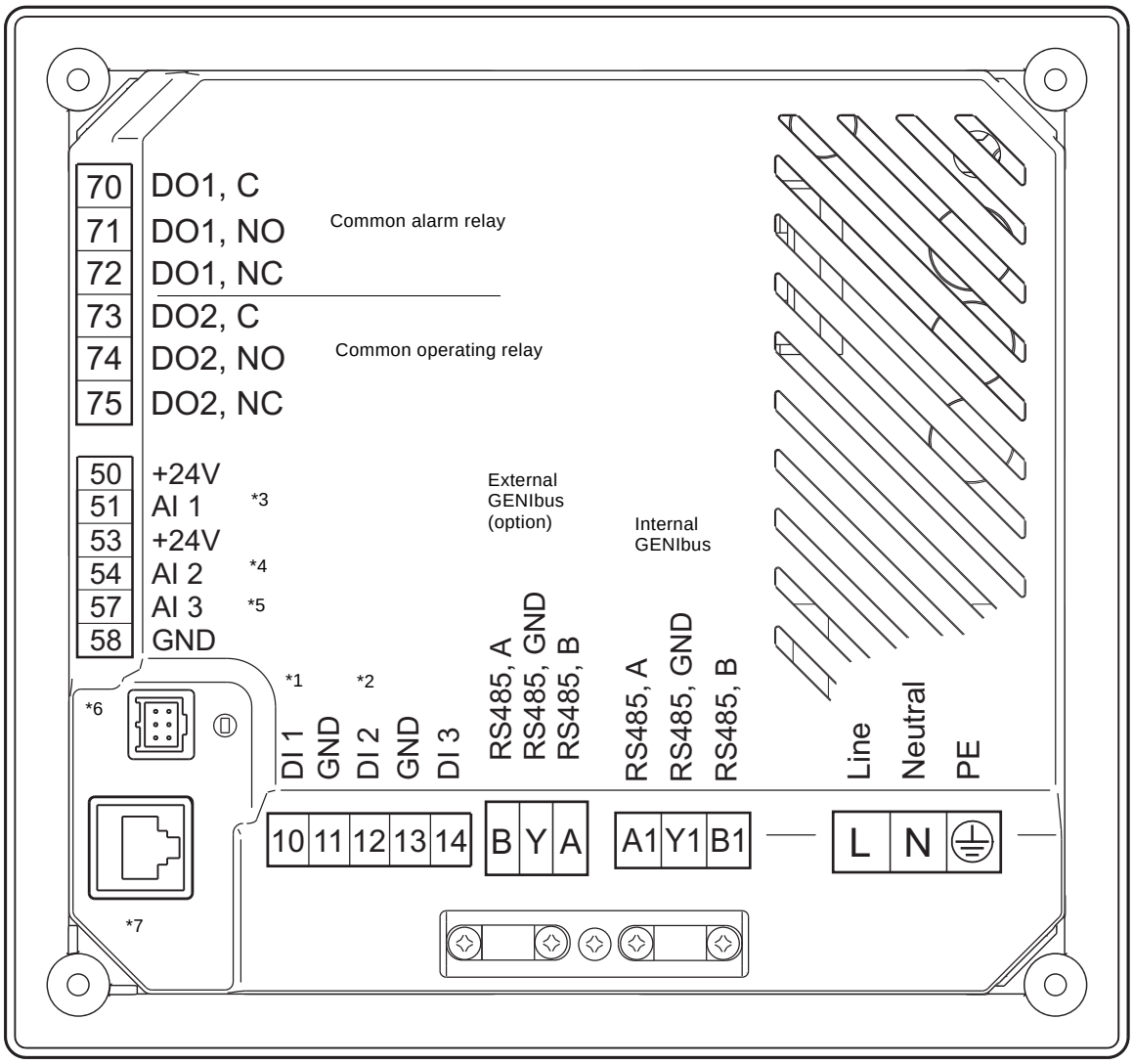


Fig. 6 Functions of terminals, CU 351

Hydro MPC default settings

***1** External start/stop

***2** Water shortage, pressure/level switch

***3** Discharge pressure

***4** Inlet pressure (deactivated if no sensor is connected)

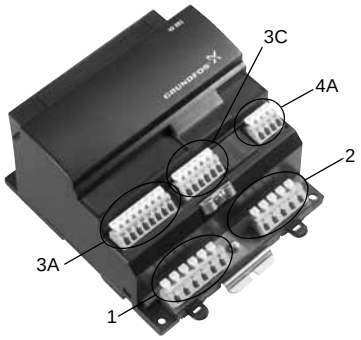
***5** Configurable analog input (deactivated if no sensor is connected)

***6** PC Tool connection, TTL

***7** Ethernet connection

3.2 Functions of terminals, IO 351A and IO 351B

3.2.1 IO 351A



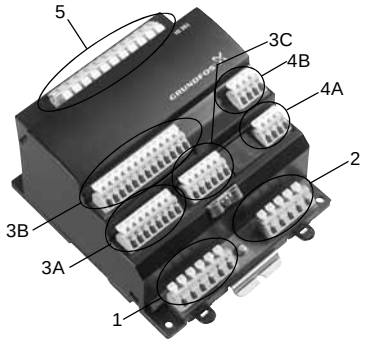
TM040220 5107

Fig. 7 Terminal groups

The module can be divided into these groups:

Group	1:	Connection of supply voltage
Group	2:	Digital outputs 1-3
Group	3A:	Digital inputs
	3C:	GENIbus
Group	4A:	Inputs for PTC sensor or thermal switch

3.2.2 IO 351B



TM03 2110 3705

Fig. 8 Terminal groups

The module can be divided into these groups:

Group	1:	Connection of supply voltage
Group	2:	Digital outputs 1-3
Group	3A:	Digital inputs
	3B:	Analog inputs and outputs
	3C:	GENIbus
Group	4A, 4B:	Inputs for PTC sensor or thermal switch
Group	5:	Digital outputs 4-7

3.2.3 Overview of inputs and outputs of modules

Type	Pump module A	Pump module B	IO module B
Analog input	Not used	Not used	2
Analog output	-	3	Not used
Digital input	3	9	9
PTC input	3	6	Not used
Digital output	3	7	7

The table below shows the modules and the GENIbus number of the individual system types.

System type and number of pumps	Module required in addition to the CU 351	GENIbus number
E	-	
ES up to four pumps	A	31
ES five to six pumps	B	31
ED up to five pumps	A	31
ED six pumps	B	31
EDF up to six pumps	B	31
EF up to three pumps	B	31
EF four to six pumps	B + B	31 + 32
F up to three pumps	B	31
F four to six pumps	B + B	31 + 32
S up to three pumps	A	31
S four to six pumps	B	31
	General module	41
	Operating light module	41
	General module + operating light module	41 + 42

3.2.4 System type and IO module variants

System type	Maximum number of pumps	Controller/module	GENIbus address		Pump number					
			Module	E-Pump	1	2	3	4	5	6
E	6	CU 351		1-6	E[1]	E[1]	E[1]	E[1]	E[1]	E[1]
ES	4	CU 351	-	1	E[1]	-	-	-	-	-
		IO 351A	31	-	-	S[2]	S[2]	S[2]	-	-
	6	CU 351	-	1	E[1]	-	-	-	-	-
		IO 351B	31	-	-	S[2]	S[2]	S[2]	S[2]	S[2]
ED	5	CU 351	-	1-2	E[1]	E[1]	-	-	-	-
		IO 351A	31	-	-	-	S[2]	S[2]	S[2]	-
	6	CU 351	-	1-2	E[1]	E[1]	-	-	-	-
		IO 351B	31	-	-	-	S[2]	S[2]	S[2]	S[2]
EF	6	CU 351	-	-	-	-	-	-	-	-
		IO 351B	31	-	EF[3]	EF[3]	EF[3]	-	-	-
		IO 351B	32	-	-	-	-	EF[3]	EF[3]	EF[3]
EDF	6	CU 351	-	-	-	-	-	-	-	-
		IO 351B	31	-	EF[3]	EF[3]	S[2]	S[2]	S[2]	S[2]
F	6	CU 351	-	-	-	-	-	-	-	-
		IO 351B	31	-	F/S[4]	F/S[4]	F/S[4]			
		IO 351B	32	-	-	-	-	F/S[4]	F/S[4]	F/S[4]
S	3	CU 351	-	-	-	-	-	-	-	-
		IO 351A	31	-	S[2]	S[2]	S[2]	-	-	-
	6	CU 351	-	-	-	-	-	-	-	-
		IO 351B	31	-	S[2]	S[2]	S[2]	S[2]	S[2]	S[2]
Accessory										
All		IO 351B	41[5]	-	Data exchange, for instance to a PLC					
		2 x IO 351B	41, 42 [6]							

1) E = 0.37 - 22 kW are E-pumps with integrated frequency converter.
30 - 55 kW are variable-speed pumps controlled by Grundfos CUE frequency converters.

2) S = Mains-operated pump.

3) EF = Variable-speed pump controlled by an external frequency converter (not CUE).

4) F/S = Mains-operated pump or variable-speed pump controlled via a common frequency converter.

5) Interface module or operating module.

6) Interface module and operating module.

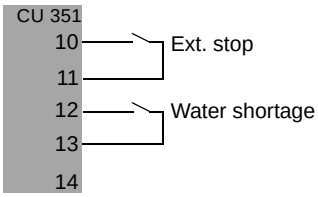
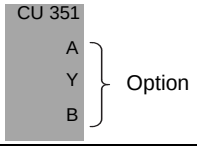
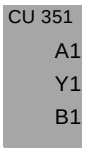
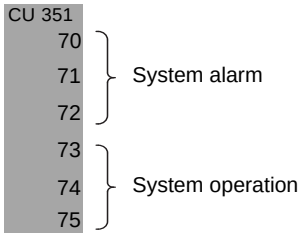
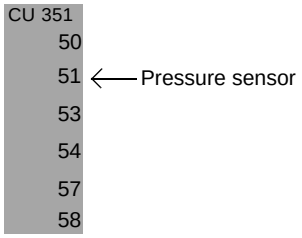
3.2.5 Internal and external connections

This section shows the internal and external connections. The section is split up according to the various system types.

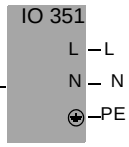
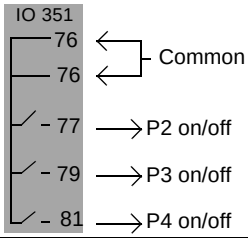
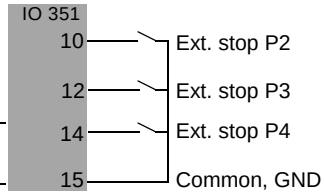
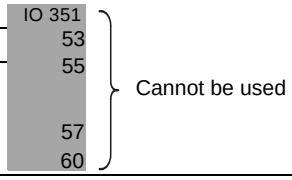
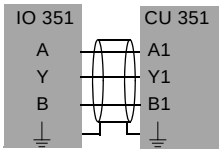
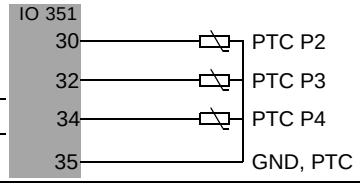
Abbreviations used:

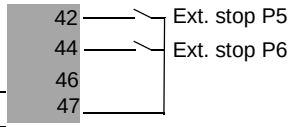
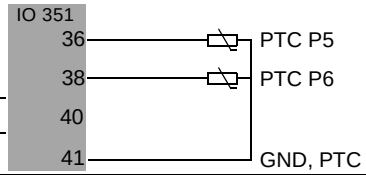
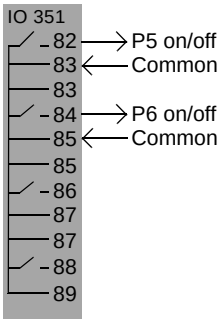
DI: Digital input
DO: Digital output
AO: Analog output
AI: Analog input
C: Common.

E systems, CU 351

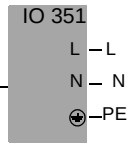
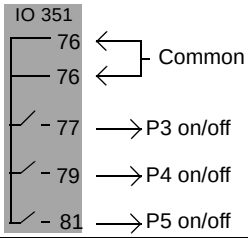
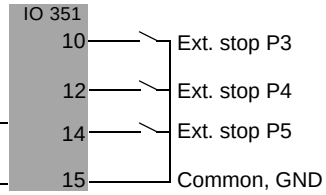
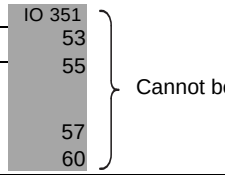
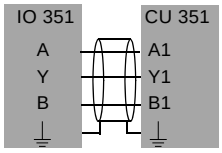
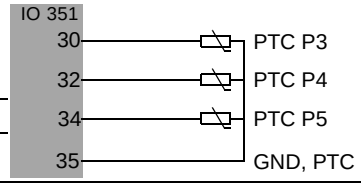
Terminal	Designation	Data	Diagram for standard configuration
10	DI 1	Digital input	
11	GND		
12	DI 2		
13	GND		
14	DI 3		
A	RS485 A	GENIbus (external)	
Y	RS485 Y		
B	RS485 B		
A1	RS485 A	GENIbus (internal)	
Y1	RS485 Y		
B1	RS485 B		
L	Phase conductor	Mains supply	
N	Neutral conductor		
PE	PE		
70	DO1, C	Digital output	
71	DO1, NO		
72	DO1, NC		
73	DO2, C		
74	DO2, NO		
75	DO2, NC		
50	+24 VDC	Analog input	
51	AI 1		
53	+24 VDC		
54	AI 2		
57	AI 3		
58	GND		

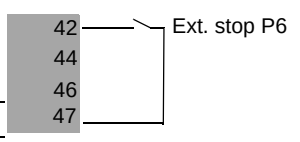
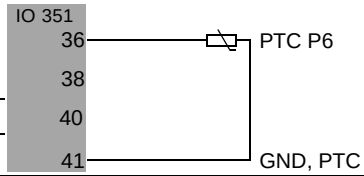
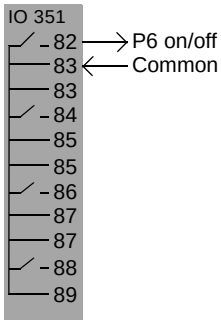
ES systems

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

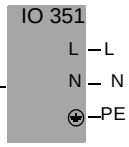
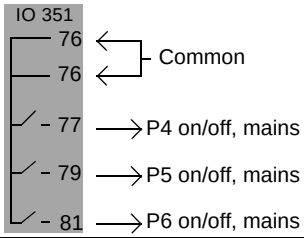
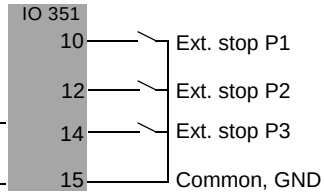
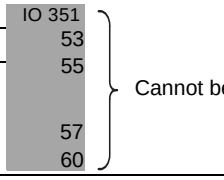
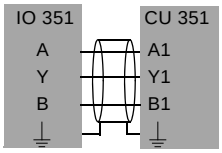
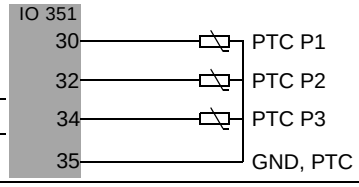
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	Cannot be used
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
	Fit jumpers instead of the external stops for which the controller is designed.			
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

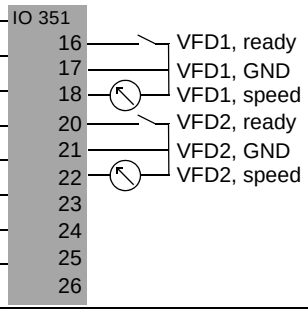
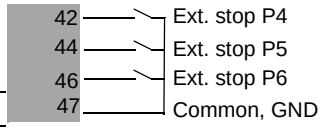
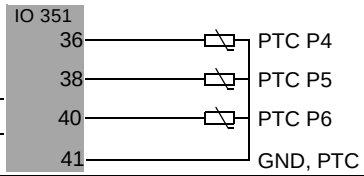
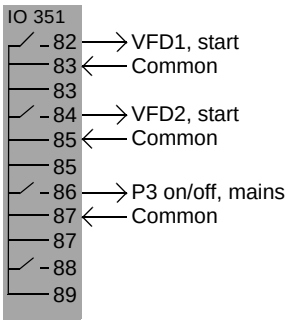
ED systems

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

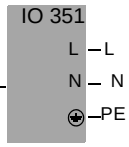
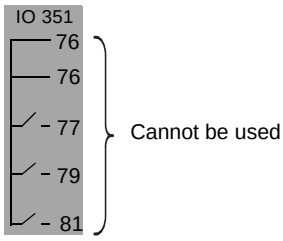
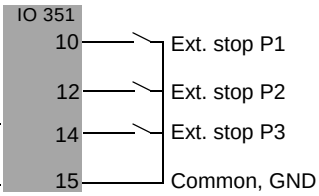
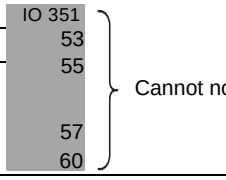
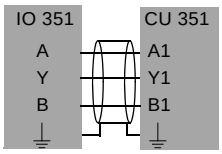
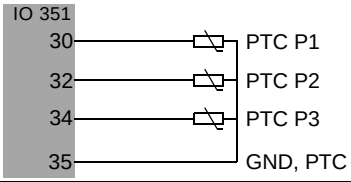
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	Cannot be used
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
	Fit jumpers instead of the external stops for which the controller is designed.			
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

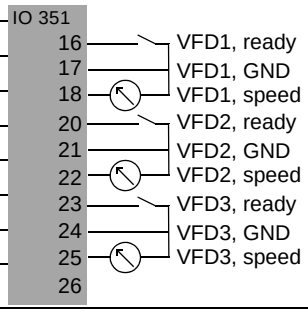
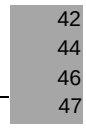
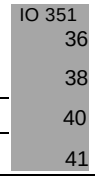
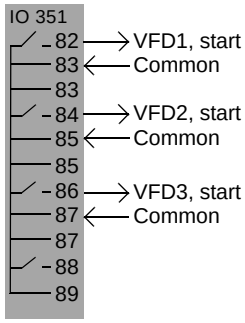
EDF systems

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

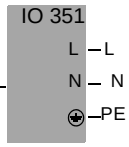
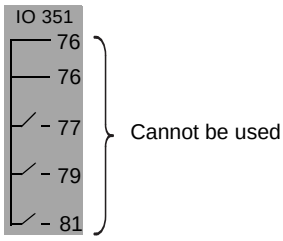
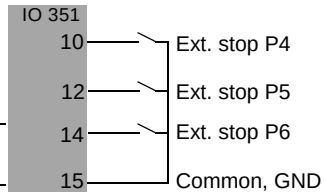
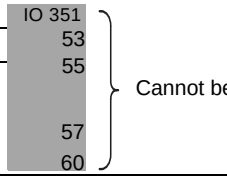
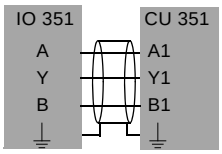
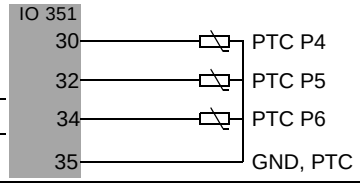
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
	Fit jumpers instead of the external stops for which the controller is designed.			
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

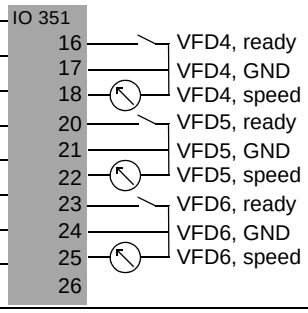
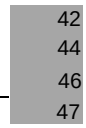
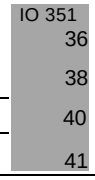
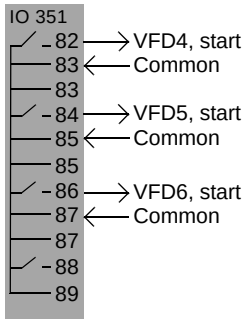
EF systems, module B1

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

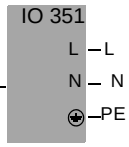
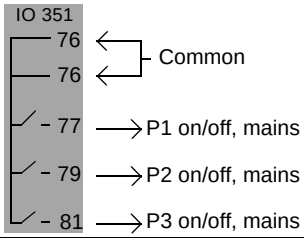
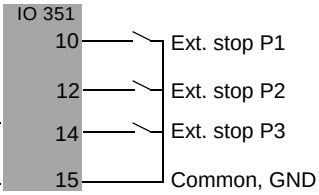
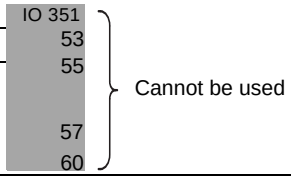
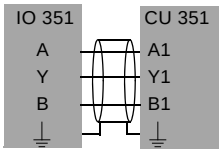
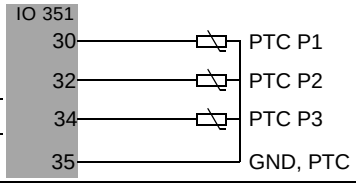
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

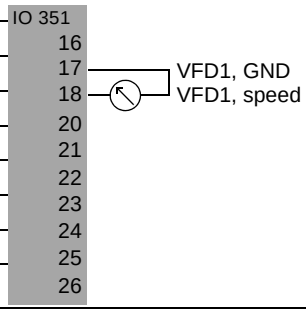
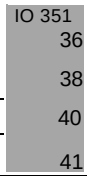
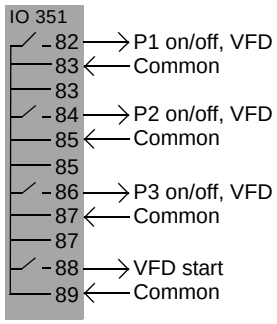
EF systems, module B2

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

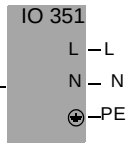
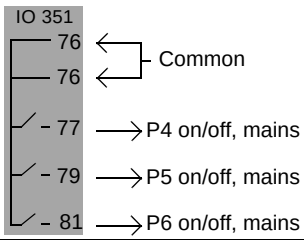
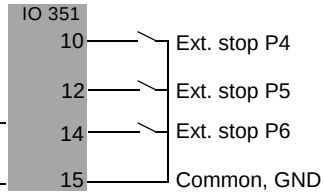
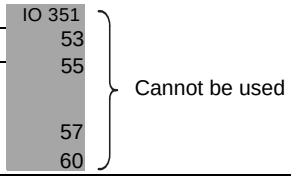
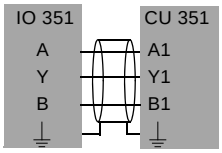
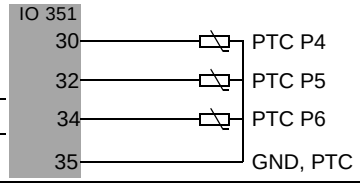
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

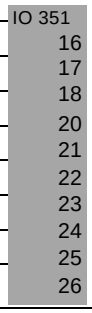
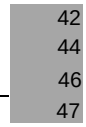
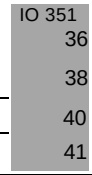
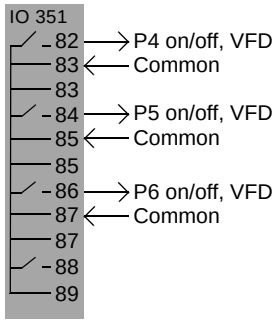
F systems, module B1

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

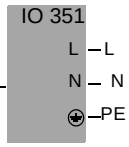
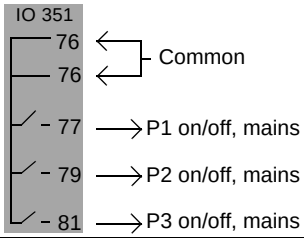
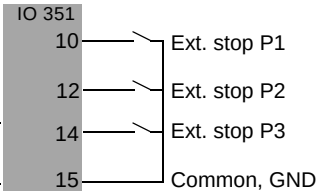
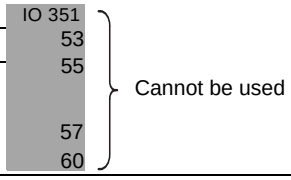
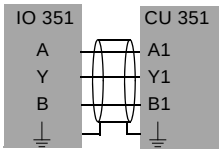
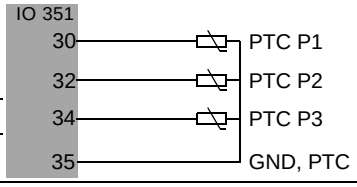
Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
	Fit jumpers instead of the external stops for which the controller is designed.			
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA25	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

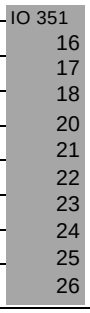
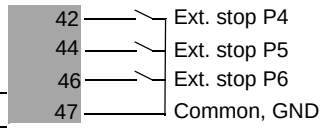
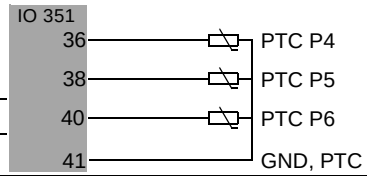
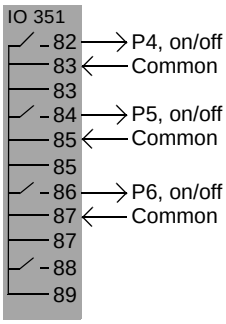
F systems, module B2

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

S systems

Group	Terminal	Designation	Data	Diagram for standard configuration
1	L L	Phase conductor	1 x 100-240 VAC ±10 %, 50/60 Hz	
	N N	Neutral conductor		
	⏚ ⏚	PE		
2	76	DO 1, 2, 3 C	Relay contact, NO Maximum load: 240 VAC, 2A Minimum load: 5 VDC, 10 mA	
	76	DO 1, 2, 3 C		
	77	DO 1 NO		
	79	DO 2 NO		
	81	DO 3 NO		
3A	10	DI 1	Digital input	
	12	DI 2		
	14	DI 3		
	15	GND		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
	Fit jumpers instead of the external stops for which the controller is designed.			
3A	53	+ 24 V	Supply to sensor. Max. 50 mA	
	55	GND		
	57	AI 1	Input for analog signal, 0/4-20 mA or 0-10 V	
	60	AI 2		
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
3C	A	RS485 A	GENIbus (internal) (Fix the screen with a cable clamp.)	
	A	RS485 A		
	Y	RS485 GND*		
	Y	RS485 GND*		
	B	RS485 B		
	B	RS485 B		
	⏚	Functional earth		
	* GND is separated from other earth connections.			
4A	30	PTC 1	Input for PTC sensor or thermal switch	
	32	PTC 2		
	34	PTC 3		
	35	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			

Group	Terminal	Designation	Data	Diagram for standard configuration
3B	16	DI 4	Digital input	
	17	GND		
	18	AO 4	Analog output, 0-10 V	
	20	DI 5	Digital input	
	21	GND		
	22	AO 5	Analog output, 0-10 V	
	24	DI 6	Digital input	
	25	GND		
	26	AO 6	Analog output	
	42	DI 7	Digital input	
	44	DI 8		
	46	DI 9		
	47	GND		
	Fit jumpers instead of the external stops for which the controller is designed.			
4B	36	PTC 4	Input for PTC sensor or thermal switch	
	38	PTC 5		
	40	PTC 6		
	41	GND, PTC		
	Fit jumpers if no PTC sensor or thermal switch is connected.			
	The terminals must only be connected to voltages of maximum 16 V_{rms} and 22.6 V_{peak} or 35 VDC.			
5	82	DO 4 NO	Relay contact, NO Maximum load: 240 VAC, 2 A Minimum load: 5 VDC, 10 mA	
	83	DO 4 C		
	83	DO 4 C		
	84	DO 5 NO		
	85	DO 5 C		
	85	DO 5 C		
	86	DO 6 NO		
	87	DO 6 C		
	87	DO 6 C		
	88	DO 7 NO		
	89	DO 7 C		

3.2.6 CU 351 and IO 351 installation and operating instructions

See WinCAPS or WebCAPS | Service | Hydro MPC | CU 351 or IO 351 | installation and operating instructions.

4. Fault correction tools

4.1 MPC/CU 351 LEDs and alarm relay

See WinCAPS or WebCAPS | Service | Hydro MPC | installation and operating instructions.

4.2 MPC display

4.2.1 Status

The first status display is shown below. This display is shown when the Hydro MPC is switched on, and it appears when the buttons of the control panel have not been touched for 15 minutes.

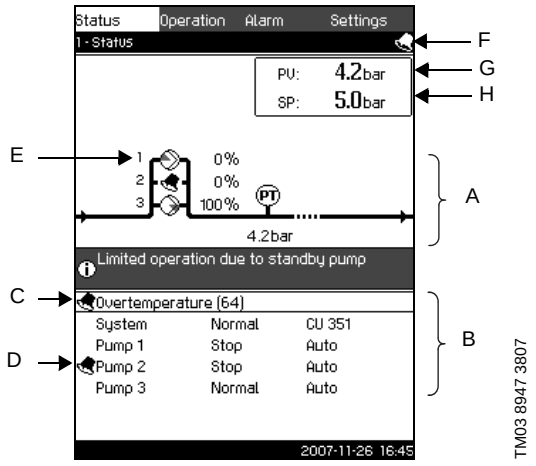


Fig. 9 Status menu

Description

No settings can be made in this menu.

The current value (process value, PV) of the control parameter, usually the discharge pressure, is shown in the upper right corner (G) together with the selected setpoint (SP) (H).

The upper half of the display (A) shows a graphic illustration of the Hydro MPC booster system and part of the system. The selected measuring parameters are shown with sensor symbol and current value. The current value of the control parameter, usually the discharge pressure, is shown under the pressure sensor symbol.

The lower display half (B) shows

- the latest current alarm, if any, and the fault cause together with the fault code in brackets
- system status with current operating mode and current source
- pump status with current operating mode and manual/auto.

Note: If a fault has occurred, the symbol will be shown in the alarm line (C) together with the cause and alarm code, for instance Overtemperature (64).

- If the fault is related to one of the pumps, the symbol will also be shown in front of the status line (D) of the pump in question. At the same time the symbol will be flashing instead of the pump symbol (E). The symbol will be shown to the right in the top line of the display (F). As long as a fault is present, this symbol will be shown in the top line of all displays. **Note:** Selecting "System" or pump indicating the alarm bell does not lead to the alarm indication, but to a status!
- Display "3.1 - Current alarms" is shown. Go to the alarm list and troubleshoot accordingly.

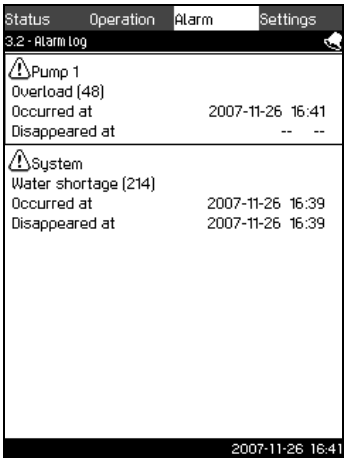
To open a menu line, mark the line with or , and press .

The display makes it possible to open status displays showing

- current alarms
- system status
- status of each pump.

Alarm log (3.2)

The alarm log can store up to 24 warnings and alarms.



TM03 2292 3707

Fig. 10 Alarm log

Description

Here warnings and alarms are shown.

For every warning or alarm, the following is shown:

- Whether it is a warning ⚠ or an alarm ⊗.
- Where the fault occurred. System, Pump 1, Pump 2, etc.
- In case of input-related faults, the input is shown.
- What the cause of the fault is, and the alarm code in brackets: Water shortage (214), Max. pressure (210), etc.
- When the fault occurred: Date and time.
- When the fault disappeared: Date and time. If the fault still exists, date and time are shown as --...--.
- The latest warning/alarm is shown at the top of the display.

4.2.2 Passwords

Passwords can be set to prevent unauthorized change of settings in the menus **Operation** and **Settings**.

See the Hydro MPC Installation and operating instructions.

Both passwords are deactivated. If a password is activated, the factory setting is "1234".

Service passwords

If a customer password is set and not available for a Grundfos service engineer, the booster system can be unlocked by using the Grundfos service code "6814". Please protect this code, and avoid unauthorized to know this code.

4.2.3 Alarm list

Check all current alarm codes before starting the fault correction.

MPC alarm indication *Protocol description	Alarm code	Associated device and device number	Description/cause	Remedy	Reset type [1]	Alarm/warning Action type
Phase failure, pump	2	Pump 1-6	-	Check that all three mains phases are within a 15 V window.	Auto	Warning
Undervoltage	7	Pump 1-6	HSD = hardware shut-down. There has been a fault, and the permissible number of restarts for the fault type has been exceeded. • Fault in mains supply. • Terminal box defective.	• Restore mains supply. • Replace terminal box.	Auto	Warning
Undervoltage, pump	40	Pump 1-6	Mains voltage is too low at start.	Bring voltage back to prescribed level.	Auto	Warning
Undervoltage, pump	42	Pump 1-6	Faulty mains voltage at the time of cutting in the terminal box.	Restore proper mains supply.	Auto	Warning
Undervoltage, pump	73	Pump 1-6	- Fall in mains supply. - Mains supply failure while motor is running.	Restore proper mains supply.	Auto	Warning
Overvoltage, pump	32	Pump 1-6	Mains voltage is too high at start.	Bring voltage back to prescribed level.	Auto	Warning
Overload, associated device	48	Pump 1-6	Heavy overload has caused software shut-down (SSD).	Check and possibly reduce the load.	Auto	Warning
Overload, associated device	50	Pump 1-6	MPF = motor protection function. The built-in motor protection has detected a sustained overload (MPF 60 sec. limit).	Check and possibly reduce load/improve cooling.	Auto	Warning
Overload, associated device	51	Pump 1-6	Heavy overload (Imax. very high). Pump blocked at start.	Deblock the pump.	Auto	Warning
Overload, associated device	54	Pump 1-6	The built-in motor protection has detected a transitory overload (MPF 3 sec. limit).	Check and possibly reduce load/improve cooling.	Auto	Warning
Too high motor temperature	65, 70	Pump 1-6	PTC sensor in the motor has signalled overtemperature.	Check and possibly reduce load/improve cooling.	Auto	Warning
Too high motor temperature	67	Pump 1-6	Terminal box has indicated overtemperature.	Check and possibly reduce load/improve cooling. (Temperature during operation can be read via PC Tool E-products.)	Auto	Warning
Other fault, associated device	76	Pump 1-6	Internal communication error has occurred in the pump.	Try to reset the fault: 1. Switch off the supply voltage. 2. Wait until all diodes are out. 3. Switch in the supply voltage. If this does not remedy the fault, replace the terminal box.	Auto	Warning
Limit 1 exceeded	190	Measured parameter	The measured parameter has exceed the limit set.	Remove the cause of the fault.	Auto/ manual	Alarm/warning Stop/unchanged

MPC alarm indication *Protocol description	Alarm code	Associated device and device number	Description/cause	Remedy	Reset type [1]	Alarm/warning Action type
Limit 2 exceeded	191	Measured parameter	The measured parameter has exceed the limit set.	Remove the cause of the fault.	Auto/ manual	Alarm/warning Stop/unchanged
Pressure relief	219	System	The monitored pressure could not be reduced sufficiently.	Reduce the pressure to below the limit.	Auto	Warning Unchanged
Pressure build-up fault	215	System	The pressure set cannot be reached within the configured time.	Check limit and pipes.	Auto/ manual	Alarm/warning Stop/unchanged
Pumps outside duty range	208	System	The pump is running outside the defined range.	Check the system.	Auto/ manual	Warning Unchanged
Pilot pump fault	216	Pilot pump	Pilot pump fault.	- Check wires. - Check the pump.	Auto	Warning
Water shortage *Water shortage	206	Booster system	The pre-pressure (or the level in the feed tank) is below its programmable warning limit.	1. Check the actual pressure and the corresponding settings. 2. Check the sensor/ switch, wiring and input according to the wiring diagram. 3. Check the sensor/ switch.	Auto/ manual	Warning Unchanged
Water shortage *Water shortage	214		The pre-pressure (or the level in the feed tank) is below its programmable alarm limit.		Auto/ manual	Alarm Stop
			The pre-pressure switch detects water shortage.			Warning Unchanged
Pressure high *Pressure above max. pressure	210		The operating pressure is above the programmable high-pressure alarm limit.		Auto/ manual	Alarm Fast stop (overrule min. seq. time)
Pressure low *Pressure below min. pressure	211		The operating pressure is below the programmable low-pressure alarm limit.		Auto/ manual	Alarm/warning Stop/unchanged
Alarm, all pumps *Alarm, all pumps	203		All pumps, set to Auto, are stopped due to a pump alarm.	Troubleshoot according to the alarm message/ code: 1. System. 2. Pumps installed. Use fault-finding for the pump.	Auto	Alarm
			Pumps are not indicating alarm.	1. Check the GENIbus wires, for instance connection and polarisation.		Stop
External fault *External fault	003		The digital input set to 'external fault' has been or is still closed.	The fault reading can be reset by means of the R100 when the digital input is no longer closed. Reset by pressing "+" or "-".	Auto/ manual	Alarm/warning Stop/unchanged
Dissimilar sensor signals *Dissimilar sensor signals	204	Primary sensor and/or redundant sensor	Primary feedback sensor value (pressure) is inconsistent with redundant feedback sensor value.	1. Check the wiring and input according to the wiring diagram. 2. Check the sensor output according to the value measured.	Auto	Warning Unchanged

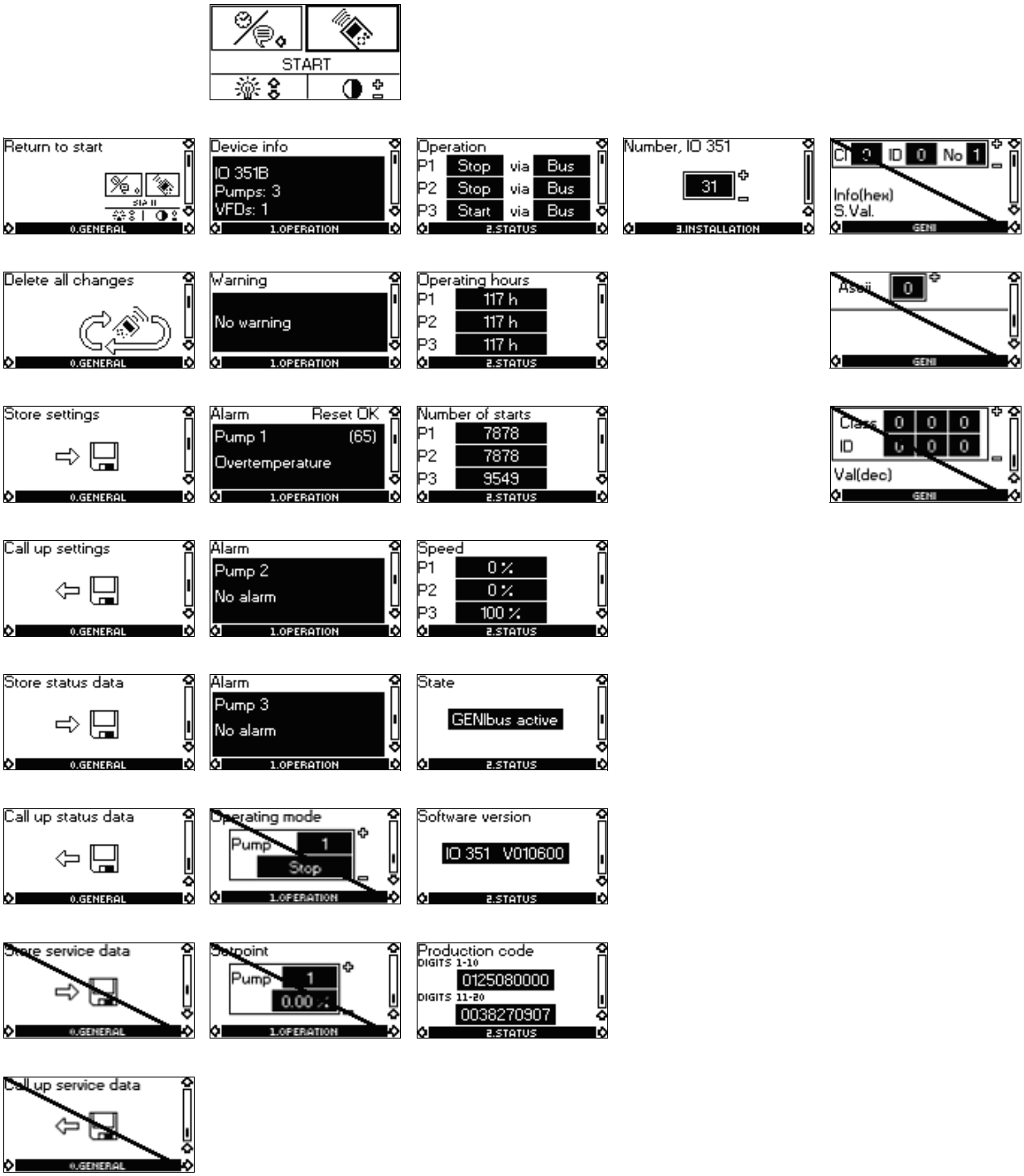
MPC alarm indication *Protocol description	Alarm code	Associated device and device number	Description/cause	Remedy	Reset type [1]	Alarm/warning Action type
Fault, primary sensor *Closed loop feedback sensor signal fault	089	Primary sensor	A fault in the sensor assigned to the feedback control has been detected.	1. Check the wiring and input according to the wiring diagram. 2. Check the sensor output according to the value measured.	Auto	Alarm
			Error in the settings of the sensor assigned to the controller.	Check the primary sensor settings.		Stop
Fault sensor *General (measurement) sensor signal fault	088	CU 351 IO 351B as IO module	The signal (for instance 4 to 20 mA) from one of the analog sensors is outside the selected signal range.	1. Check the wiring and input according to the wiring diagram. 2. Check the sensor output according to the measured value.	Auto	Warning Unchanged
Internal fault CU 351 *Real time clock out of order	157	CU 351	The real-time clock in the CU 351 is out of order.	Replace the CU 351.	Auto	Warning
Fault, ethernet *Ethernet: No address from DHCP server	231		No address from DHCP server.	Communication error. Contact the system integrator.		
Fault, ethernet *Ethernet: Auto disabled due to misuse	232		Auto-disabled due to misuse.			Unchanged
FLASH parameter verification error *FLASH parameter verification error	083		Verification error in the CU 351 FLASH memory.	Replace the CU 351.		
Other fault, associated device	83		Setting data not correct.	Other fault, associated device		Warning
IO 351 internal fault *Hardware fault type 2	080	IO 351	Hardware fault in the IO 351A.	See Current alarms, and identify the faulty IO 351 module from the alarm message. Replace the module.	Auto	Warning
			Hardware fault in the IO 351B.			Unchanged
VFD not ready *VFD not ready	213	Pump 1-6 CU 351	The VFD signal relay do not release the VFD for operation.	1. Check for VFD alarm. 2. Check the wiring and input according to the wiring diagram.	Auto	Warning Unchanged
Communication fault *Pump communication fault	010	Pump 1-6 IO 351	No GENIbus communication with a device connected to the CU 351.	See Current alarms, and identify the faulty device from the alarm message. 1. Check power supply. 2. Check GENIbus cable connection. 3. Check that the device GENIbus number is correct, using the R100.	Auto	Warning Unchanged
Device alarms	From device	Pump 1-6	The device is in alarm.	See Current alarms, and identify the faulty device from the alarm message. 1. Fault-find according to the Service instructions for the device.	Auto	Warning Unchanged

[1] Reset type, either:
- "Auto acknowledge" (auto)
- "Auto acknowledge" or "Manual acknowledge" (auto/man)

[2] System goes to operating mode "Stop" (no delay (< 0.5 s) between pump disconnections).

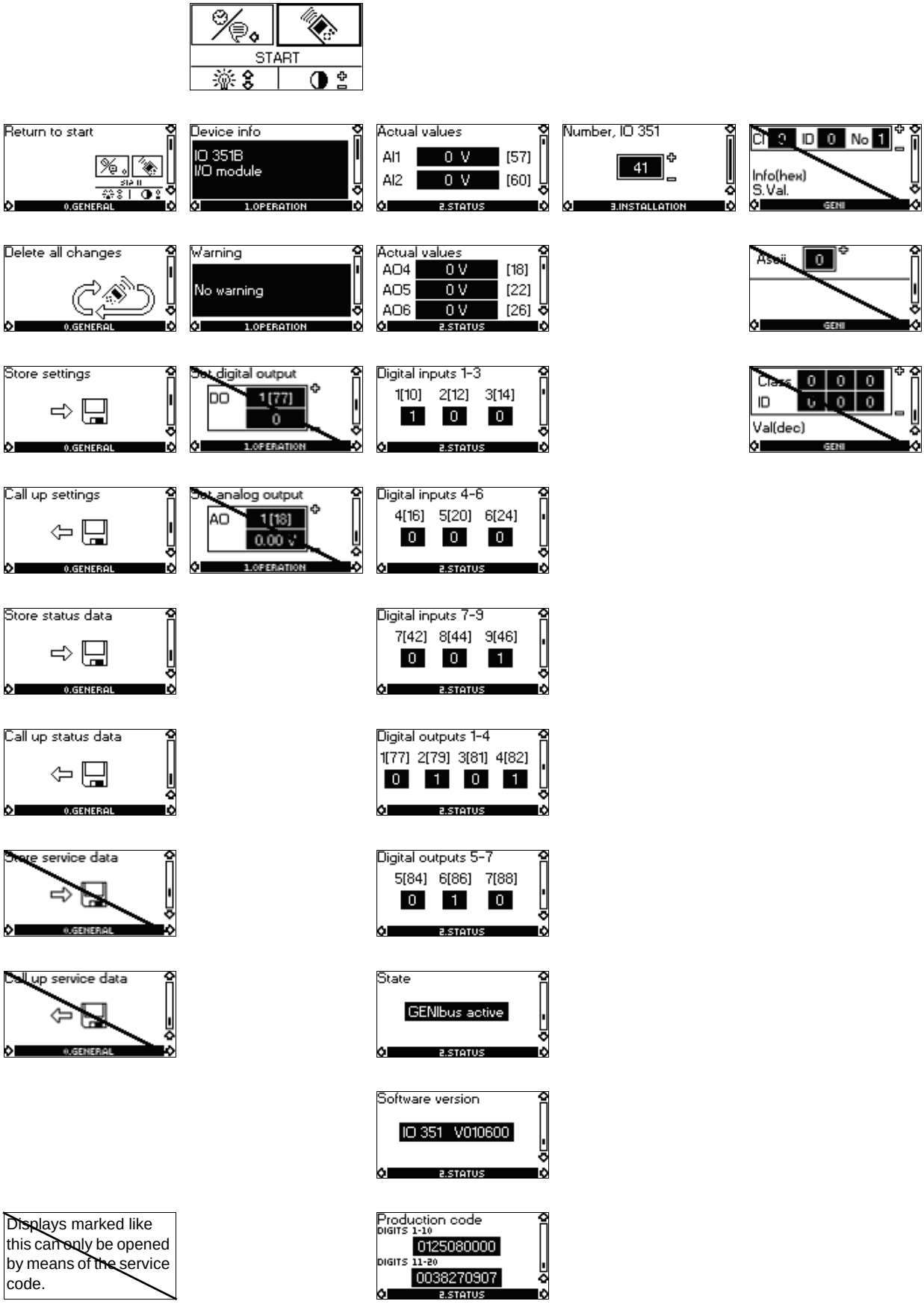
4.3 R100

4.3.1 R100 menu for Hydro MPC, IO 351A and IO 351B (configured as pump module)



Displays marked like this can only be opened by means of the service code.

4.3.2 R100 menu for Hydro MPC, IO 351B
(configured as general-purpose installation and operating instructions)



4.4 PC Tool E-products

The Grundfos PC Tool E-products, version V05 or later, supports the Hydro MPC control and the components included. A detailed PC Tool Help assistant is available in the tool program, and a user manual can be printed in PDF format from the tool. The tool can be connected to the CU 351 control unit of the Hydro MPC booster system and communicate with IO units and MGE pumps. The network list of the tool shows the units which are capable of communicating with the application in question.

The tool supports the following functions:

4.4.1 Network list

This is a list of all GENIbus products connected to the network. Clicking the [Network list] button in the toolbar allows you to toggle between the network list expanded and collapsed.

4.4.2 Monitor

This function gives an overview and details of the operating status of the product.

Output

If the expected output function does not take place according to the graphical presentation, it may be due to the following faults:

- Defective component connected to the output. Check the component according to the wiring diagram.
- The output from the IO module does not function according to the graphical presentation. Check the physical output.

Input

If the expected input function does not take place according to the graphical presentation, it may be due to the following faults:

- The input signal is not as shown in the graphical presentation. Check that the signal is OK on the input terminal.
- The input of the IO module is defective. Replace the IO module.
- The CU 351 is defective.

4.4.3 Standard configuration

The standard configuration function allows you to select the appropriate standard configuration file for the product and send the file to the product.

It is possible to import a Grundfos Standard Configuration (GSC) file library via **Tools | Update configuration files**.

From factory, the MPC booster system is configured/programmed for the application.

If an IO module is replaced, it will automatically be configured from the CU 351 when the booster system is restarted. (Remember to give the new unit the correct Genibus address by means of the R100).

If replaced, a CU 351 module must be configured to the application in question. Follow the instructions in the "HELP assistant".

Standard configuration files are included in the tool when it is installed for the first time.

Subsequently, it is the user's responsibility to download the current version of the "Standard configuration file library". See section 4.4.6 Updating configuration files.

4.4.4 Custom configuration

The custom configuration function enables you to change selected standard configuration settings to a custom configuration.

Custom configuration should be considered as an expert tool to be used for changing/adjusting standard data.

4.4.5 Data logging

Data logging of all data takes place continuously. In the net list, you can select the data to be visible. When the PC Tool is shut down, you will be asked whether you want to save your data log.

4.4.6 Updating configuration files

You can import an updated library of the standard configuration files from **Tools | Update configuration files**. If the selected library is the same as or older than the one already installed, a warning allows you to either skip the update or proceed to overwrite the existing library. **Update GSC Files** opens a dialogue, allowing you to browse for the zipped GSC files library.

Note: If your computer is connected to a Grundfos network, the dialogue offers an automatic update. When you select the automatic update, the PC Tool will find the updated GSC library on the Grundfos network. Accordingly, you need not browse for the library.

5. Factory configuration of Hydro MPC

5.1 Necessary equipment

The following equipment is needed:

1. R100, SW version 14, Nov.01, 2005 or later
2. PC Tool E-Product, version V05 or later
3. PC Tool Link adapter.

5.2 Factory configuration of Hydro MPC

The configuration consists of these steps:

5.2.1 Setting the GENIbus address in IO 351 module, if any.

5.2.2 Configuration of the CU 351.

5.2.3 Configuration of external frequency converter(s), if any.

5.2.4 Configuration of E-pump(s), if any.

5.2.1 Setting the GENIbus number in IO 351 modules, if any

Depending on the Control MPC system type and Control MPC options, the control panel is equipped with none or up to four IO 351A/B modules.

The modules present will have the designation numbers A1, A2, A01 or A03.

These units must have a GENIbus number according to the designation table, Table 1.

Module with designation number	Address of module	Control MPC option GSC file to download
A1 (pump module - 1)	31	
A2 (pump module - 2)	32	
A01 (interface module)	41	96592481
A03 (operating light module)	41	96592487
A03 (operating light/pilot pump module)	41	96782280
A03 (operating light/pressure relief module)	41	96782282
A01+A03 (interface module and operating light module)	41 + 42	96592488
A01+A03 (interface module and operating light/pilot pump module)	41 + 42	96782283
A01+A03 (interface module and operating light/pressure relief module)	41 + 42	96782284

Table 1 Designation table

To assign GENIbus numbers to the IO 351 module(s), if any, proceed as follows:

1. Turn on the power supply to the Control MPC.
2. Turn on the R100 and point it at the IR window of the first IO 351 module to make contact with this unit.

Note: If there is more than one IO 351, move close to the IR window to make sure that only one unit is communicating with the R100 at a time.

TM03 9972 4707

Fig. 11 IR window of the IO 351

3. Go to the first display in the installation menu “Number, IO351” with the R100. See fig. 12. Set the address of the module according to the designation table 1.

TM03 9973 4707

Fig. 12 Installation menu “Number, IO351”

4. Send the number to the unit by pressing the OK button on the R100.
5. Switch off the R100.
6. Repeat points 2 to 5 for each IO 351 module.

5.2.2 Configuration of the CU 351

To make the system work properly, the CU 351 in the Control MPC must be configured with a number of GSC files (**G**rundfos **S**tandard **C**onfiguration files).

- Control MPC requires a “Control MPC GSC file” which includes information about the system type in question (E, ES, ED, etc.), and the number of main pumps in the system.
- Control MPC based on one or two IO 351B modules with the designation numbers A01 and A03 requires “Control MPC-options GSC file”.
- Hydro MPC GSC file describes the discharge pressure sensor range and the dry-running protection type.
- Hydro MPC fitted with a redundant primary sensor requires “Hydro MPC options GSC file”.
- A “Pump Data GSC file” describing the performance curve of the pump in question.

It is important to notice that the configuration has to be done in the right order:

1. Control MPC
2. Control MPC options, if any.
3. Hydro MPC
4. Hydro MPC options, if any
5. Pump data.

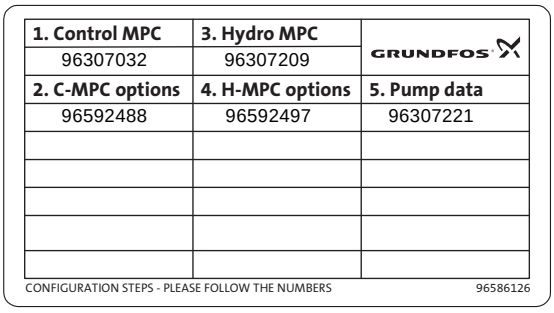
Configuration of Control MPC

Example: Hydro MPC-ES with three pumps CRI(E) 5-8.

Control MPC has two options, "Interface I/O module" and "Operation lights module".

Hydro MPC has one option, “Redundant sensor, 16 bar”.

The printed label of GSC files will look like fig. 13.



TM04 2155 2108

Fig. 13 Example of a printed label of GSC files

Note 1

After each GSC file download (if no further configurations are to be made), restart the CU 351 unit by pressing ’Restart’ in the right bottom of the PC Tool.

Note 2

When “Restart” is pressed, the CU 351 will initialise.

A progress bar indicating how far the initialisation is in per cent appears in the display. This procedure will take about 25 sec.

Step-by-step configuration of Control MPC

1. Set all automatic circuit breakers covering the pumps to off.
2. Connect the PC Tool to the service connection on the back of the CU 351. See fig. 14.

TM03 9967 4707

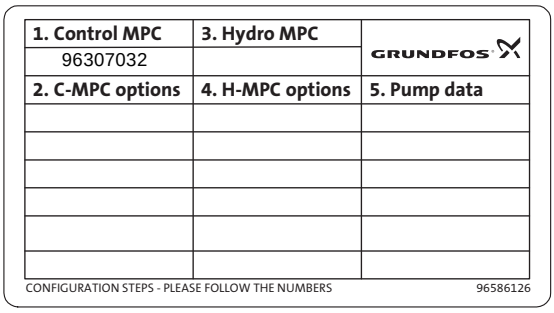
Fig. 14 Service connection of the CU 351

3. Turn on the power supply to the Control MPC.
4. Start the PC Tool E-products.
5. When communication has been established, the PC Tool ‘Network list’ will display the icons for the CU 351 and all IO 351 module(s) if any.
6. Select CU 351 in the ‘Network list’.
7. Select the PC Tool function ‘Standard configuration’.
8. Go to section ‘Search by’, and select ‘Number’.
9. Find the relevant GSC file number from table 2.
   Type the GSC file number in the ‘Configuration No.’ field, and click ‘Search Now’.

1. Control MPC							
Number of pumps	**E**	**ES**	**ED**	**EF**	**EDF**	**F**	**S**
1	96307025			96307040		96307050	96307056
2	96307026	96307031		96307041		96307051	96307057
3	96307027	96307032	96307036	96307042	96307046	96307052	96307058
4	96307028	96307033	96307037	96307043	96307047	96307053	96307059
5	96307029	96307034	96307038	96307044	96307048	96307054	96307060
6	96307030	96307035	96307039	96307045	96307049	96307055	96307061

Table 2 "Control MPC" GSC files

10. Select the file from the ‘Configuration files’ field, and press ‘Send’.
11. Check that the selected configuration file number is now shown in the label in the PC Tool, Standard Configuration under ‘1. Control MPC’, indicating that the CU 351 has received and stored the file. See fig. 15.



TM04 2155 2108

Fig. 15 “Control MPC” on GSC files label

Configuration of Control MPC options, if any

Configuration of control MPC options require that the configuration of the Control MPC has taken place.

Configure the option with the correct GSC file:

1. Find the relevant GSC file number from table 3.
   Type the GSC file number in the ‘Configuration No.’ field, and click ‘Search Now’.

2. Control MPC options	
IO 351B interface addr. 41 gsc	96592481
Operating light addr. 41 gsc	96592487
Int. + operating light addr. 41+42 gsc	96592488
Pilot pump addr. 41 gsc	96782280
Pressure relief addr. 41 gsc	96782282
Int. +pilot pump addr. 41+42 gsc	96782283
Int. +pressure relief addr. 41+42 gsc	96782284

Table 3 “Control MPC Options” GSC files

2. Select the file from the ‘Configuration files’ field, and press ‘Send’.
3. Check that the selected configuration file number is now shown in the label in the PC Tool, Standard Configuration under ‘2. C-MPC Options’, indicating that the CU 351 has received and stored the file. See fig. 16.

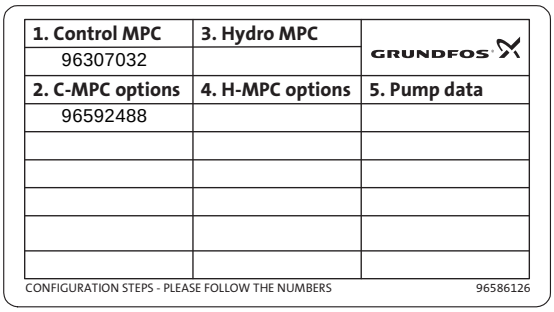


Fig. 16 “Control MPC options” on GSC files label

Configuration of Hydro MPC

Configuration of Hydro MPC requires that the configuration of the Control MPC and Control MPC options, if any, has taken place.

To configure the CU 351 with the correct Hydro MPC GSC file:

1. Find the relevant GSC file number from table 4.
   Type the GSC file number in the ‘Configuration No.’ field, and click ‘Search Now’.

3. Hydro MPC				
Water shortage protection	**Sensor range 0-10 bar**	**Sensor range 0-16 bar**	**Sensor range 0-25 bar**	**Sensor range 0-40 bar**
No protection	96307198	96307205	96307212	96611747
0-1 bar	96307199	96307206	96307213	96611748
0-4 bar	96307200	96307207	96307214	96611749
0-6 bar	96307201	96307208	96307215	96611760
0-10 bar	96307202	96307209	96307216	96611761
0-16 bar		96307210	96307217	96611762
0-25 bar			96307203	96611763
0-40 bar				96611764
Pressure/level switch	96307204	96307211	96307218	96611765

Table 4 “Hydro MPC” GSC files

2. Select the file from the ‘Configuration files’ field, and press ‘Send’.
3. Check that the selected configuration file number is now shown on the label in the PC Tool, Standard Configuration under ‘3. Hydro MPC’, indicating that the CU 351 has received and stored the file. See fig. 17.

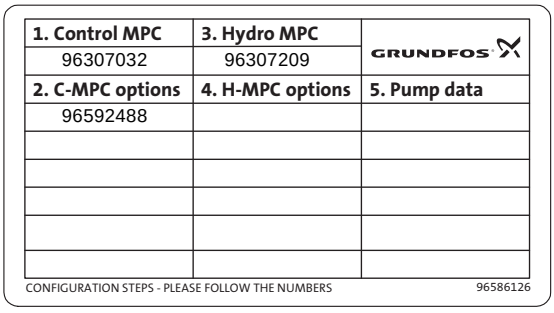


Fig. 17 “Hydro MPC” on GSC files label

Configuration of Hydro MPC options

A redundant primary sensor fitted in the booster system requires a “Hydro MPC Option” GSC file.

1. Find the relevant GSC file number from Table 5.
   Type the GSC file number in the ‘Configuration No.’ field, and click ‘Search Now’.

4. Hydro MPC options	
Redundant sensor, 1 bar	96592493
Redundant sensor, 4 bar	96592494
Redundant sensor, 6 bar	96592495
Redundant sensor, 10 bar	96592496
Redundant sensor, 16 bar	96592497
Redundant sensor, 25 bar	96592498

Table 5 “Hydro MPC Options” GSC files

2. Select the file from the ‘Configuration files’ field, and press ‘Send’.
3. Check that the selected configuration file number is now shown in the label in the PC Tool,
   Standard Configuration under ‘4. H-MPC Options’, indicating that the CU 351 has received and stored the file.
   See fig. 18.

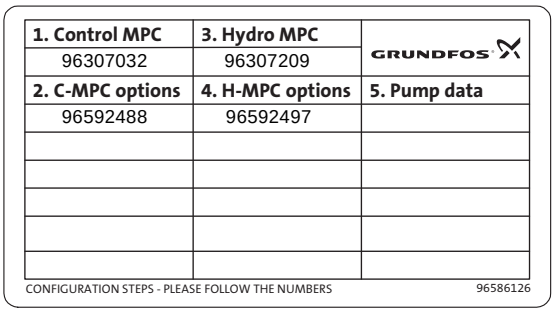


Fig. 18 “Hydro MPC options” on GSC files label

Configuration of pump data

A “pump data” GSC file contains information about the pumps performance curve.

Some of the functions in the Control/Hydro MPC use this information to work properly.

1. Find the relevant GSC file number from table 6.
   Type the GSC file number in the ‘Configuration No.’ field, and click ‘Search Now’.

5. Pump data

CR(E) 3		CR(E) 5		CR(E) 10	
CR(E) 3-2	96397459	**CR(E) 5-2**	96397481	**CR(E) 10-1**	96397500
CR(E) 3-3	96397460	**CR(E) 5-3**	96397482	**CR(E) 10-2**	96397501
CR(E) 3-4	96397461	**CR(E) 5-4**	96307220	**CR(E) 10-3**	96307223
CR(E) 3-5	96397462	**CR(E) 5-5**	96624122	**CR(E) 10-4**	96397502
CR(E) 3-6	96397463	**CR(E) 5-6**	96397483	**CR(E) 10-5**	96397503
CR(E) 3-7	96397464	**CR(E) 5-7**	96397484	**CR(E) 10-6**	96307224
CR(E) 3-8	96397465	**CR(E) 5-8**	96307221	**CR(E) 10-7**	96397504
CR(E) 3-9	96397466	**CR(E) 5-9**	96397485	**CR(E) 10-8**	96397505
CR(E) 3-10	96307219	**CR(E) 5-10**	96307222	**CR(E) 10-9**	96397506
CR(E) 3-11	96397467	**CR(E) 5-11**	96397486	**CR(E) 10-10**	96397507
CR(E) 3-12	96397468	**CR(E) 5-12**	96397487	**CR(E) 10-12**	96397508
CR(E) 3-13	96397469	**CR(E) 5-13**	96397488	**CR(E) 10-14**	96397509
CR(E) 3-15	96397470	**CR(E) 5-14**	96397489	**CR(E) 10-16**	96397510
CR(E) 3-17	96397471	**CR(E) 5-15**	96397490	**CR(E) 10-18**	96397511
CR(E) 3-19	96397472	**CR(E) 5-16**	96397491	**CR(E) 10-20**	96397512
CR(E) 3-21	96397473	**CR(E) 5-18**	96397492	**CR(E) 10-22**	96397513
CR(E) 3-23	96397474	**CR(E) 5-20**	96397493		
CR(E) 3-25	96397475	**CR(E) 5-22**	96397494		
CR(E) 3-27	96397476	**CR(E) 5-24**	96397495		
CR(E) 3-29	96397477	**CR(E) 5-26**	96397496		
CR(E) 3-31	96397478	**CR(E) 5-29**	96397497		
CR(E) 3-33	96397479	**CR(E) 5-32**	96397498		
CR(E) 3-36	96397480	**CR(E) 5-36**	96397499		

CR(E)15		CR(E)20		CR(E)32	
CR(E) 15-1	96700488	**CR(E) 20-1-2**	96700489	**CR(E) 32-1-1**	96397535
CR(E) 15-2	96397514	**CR(E) 20-2**	96397525	**CR(E) 32-1**	96397536
CR(E) 15-3	96397515	**CR(E) 20-3**	96397526	**CR(E) 32-2-2**	96397537
CR(E) 15-4	96397516	**CR(E) 20-4**	96397527	**CR(E) 32-2**	96397538
CR(E) 15-5	96307225	**CR(E) 20-5**	96307226	**CR(E) 32-3-2**	96397539
CR(E) 15-6	96397517	**CR(E) 20-6**	96397528	**CR(E) 32-3**	96397540
CR(E) 15-7	96397518	**CR(E) 20-7**	96397529	**CR(E) 32-4-2**	96397541
CR(E) 15-8	96397519	**CR(E) 20-8**	96397530	**CR(E) 32-4**	96307227
CR(E) 15-9	96397520	**CR(E) 20-10**	96397531	**CR(E) 32-5-2**	96397543
CR(E) 15-10	96397521	**CR(E) 20-12**	96397532	**CR(E) 32-5**	96397544
CR(E) 15-12	96397522	**CR(E) 20-14**	96397533	**CR(E) 32-6-2**	96397545
CR(E) 15-14	96397523	**CR(E) 20-17**	96397534	**CR(E) 32-6**	96397546
CR(E) 15-17	96397524			**CR(E) 32-7-2**	96397547
				CR(E) 32-7	96397548
				CR(E) 32-8-2	96397549
				CR(E) 32-8	96397550
				CR(E) 32-9-2	96397551
				CR(E) 32-9	96397552
				CR(E) 32-10-2	96397734
				CR(E) 32-10	96397553
				CR(E) 32-11-2	96397735
				CR(E) 32-11	96397554
				CR(E) 32-12-2	96397736
				CR(E) 32-12	96397555
				CR(E) 32-13-2	96397737
				CR(E) 32-13	96397556
				CR(E) 32-14-2	96397738
				CR(E) 32-14	96397557

CR(E) 45		CR(E) 64		CR(E) 90	
CR(E) 45-1-1	96397558	**CR(E) 64-1-1**	96397580	**CR(E) 90-1-1**	96397601
CR(E) 45-1	96397559	**CR(E) 64-1**	96397581	**CR(E) 90-1**	96397602
CR(E) 45-2-2	96397560	**CR(E) 64-2-2**	96397582	**CR(E) 90-2-2**	96397603
CR(E) 45-2	96307228	**CR(E) 64-2-1**	96397583	**CR(E) 90-2**	96397604
CR(E) 45-3-2	96397561	**CR(E) 64-2**	96397584	**CR(E) 90-3-2**	96397605
CR(E) 45-3	96307229	**CR(E) 64-3-2**	96397585	**CR(E) 90-3**	96307232
CR(E) 45-4-2	96397562	**CR(E) 64-3-1**	96397586	**CR(E) 90-4-2**	96397606
CR(E) 45-4	96307230	**CR(E) 64-3**	96397587	**CR(E) 90-4**	96397607
CR(E) 45-5-2	96397563	**CR(E) 64-4-2**	96307231	**CR(E) 90-5-2**	96397608
CR(E) 45-5	96397564	**CR(E) 64-4-1**	96397588	**CR(E) 90-5**	96397609
CR(E) 45-6-2	96397565	**CR(E) 64-4**	96397589	**CR(E) 90-6-2**	96397610
CR(E) 45-6	96397566	**CR(E) 64-5-2**	96397590	**CR(E) 90-6**	96397611
CR(E) 45-7-2	96397567	**CR(E) 64-5-1**	96397591		
CR(E) 45-7	96397568	**CR(E) 64-5**	96397592		
CR(E) 45-8-2	96397569	**CR(E) 64-6-2**	96397593		
CR(E) 45-8	96397570	**CR(E) 64-6-1**	96397594		
CR(E) 45-9-2	96397571	**CR(E) 64-6**	96397595		
CR(E) 45-9	96397572	**CR(E) 64-7-2**	96397596		
CR(E) 45-10-2	96397573	**CR(E) 64-7-1**	96397597		
CR(E) 45-10	96397574	**CR(E) 64-7**	96397598		
CR(E) 45-11-2	96397575	**CR(E) 64-8-2**	96397599		
CR(E) 45-11	96397576	**CR(E) 64-8-1**	96397600		
CR(E) 45-12-2	96397577				
CR(E) 45-12	96397578				
CR(E) 45-13-2	96397579				

Table 6 “Pump Data” GSC files

2. Select the file from the ‘Configuration files’ field, and press ‘Send’.
3. Check that the selected configuration file number is now shown in the label in the PC Tool, Standard Configuration under ‘5.Pump Data’, indicating that the CU 351 has received and stored the file. See fig. 19.

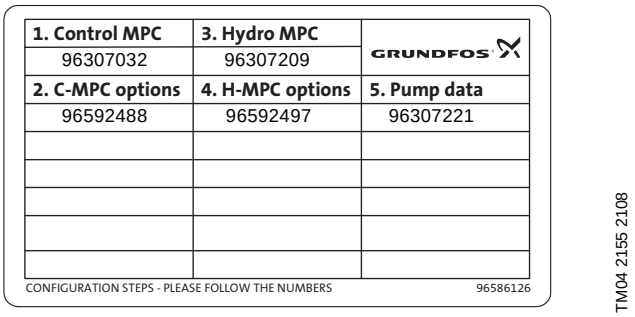


Fig. 19 “Pump data” on GSC files label

4. Restart the CU 351 unit by pressing, “Restart” in the right bottom of the PC Tool.

Note

When “Restart” is pressed, the CU 351 will initialise.

A progress bar indicating how far the initialisation is in per cent appears in the display. This procedure will take about 25 sec.

5.2.3 Configuration of external frequency converters, if any

The manufacturer's factory settings of the external frequency converter(s) used in MPC F, EF and EDF must be changed to the Grundfos settings before the MPC is ready for test.

To configure the external frequency converter:

1. Turn on the power supply to the frequency converter(s) by means of the automatic circuit breaker.
2. For each frequency converter, do the settings as described in the table below.

VLT 2800

Press [QUICK MENU] + [+] to access all parameters.

Parameter	Factory setting			Grundfos setting		
	Function	Value or number in display of VLT		Function	Value or number in display of VLT	
		Value	Number of function		Value	Number of function
001	Language	English	[0]	Language	-**	-
101	Torque characteristic	Constant torque	[1]	Torque characteristic	Variable torque low	[2]
					Variable torque medium	[3]
102	Motor power	-	-	Motor power	-***	-
103	Motor voltage	230/400V	-	Motor voltage	-***	-
104	Motor frequency	50 Hz		Motor frequency	-***	-
105	Motor current		-	Motor current	-***	-
106	Rated motor speed		-	Rated motor speed	-***	-
128	Thermal motor protection	No protection *	[0]	Thermal motor protection	Thermistor trip, LC filter connected*	[2]
					No thermal protection, LC filter not connected*	[0]
136	Slip compensation	100 %	-	Slip compensation	0 %	-
202	Output frequency high limit	132 Hz	-	Output frequency high limit	-****	-
205	Max. reference	50 Hz	-	Max. reference	-****	-
207	Ramp-up time 1	3 sec.	-	Ramp-up time 1	1 sec.	-
208	Ramp-down time 1	3 sec.	-	Ramp-down time 1	1 sec.	-
303	Digital input 19	Reversing	[9]	Digital input 19	Thermistor, LC filter connected*	[25]
					No function, LC filter not connected*	[0]
405	Reset function	Manual reset	[0]	Reset function	Automatic reset x 10	[10]
412	Variable switching frequency	Without LC-filter	[2]	Variable switching frequency	LC-filter connected	[3]
					Without LC-filter	[2]

* Thermistor function used for thermal protection of LC filter.

** For information about languages available, see relevant documentation.

*** Use data from the Hydro MPC booster system.

**** 51 Hz for a 50 Hz supply and 61 Hz for a 60 Hz supply.

Factory settings of VLT 2800

To recall the factory settings of all parameters, follow the procedures below:

1. Disconnect the power supply.
2. Press and hold [QUICK MENU] + [+] + [CHANGE DATA] and reconnect the power supply.
3. All parameters are now factory-set, except the fault log.

VLT 6000

Press [EXTEND MENU] to access all parameters.

Parameter	Factory setting			Grundfos setting		
	Function	Value or number in display of VLT		Function	Value or number in display of VLT	
		Value	Number of function		Value	Number of function
001	Language	-	-	Language	-**	-
102	Motor power	-	-	Motor power	-***	-
103	Motor voltage	-	-	Motor voltage	-***	-
104	Frequency	50 Hz		Frequency	-***	-
105	Motor current	-	-	Motor current	-***	-
106	Rated motor speed	-	-	Rated motor speed	-***	-
117	ETR trip1	-	4	Thermistor trip, LC filter connected*	-	2
				No thermal protection, LC filter not connected *	-	0
202	Max. frequency	50 Hz	-	Max. frequency	-****	-
205	Max. reference frequency	50 Hz	-	Max. reference frequency	-****	-
206	Ramp-up time	-	-	Ramp-up time	1 sec.	-
207	Ramp-down time	-	-	Ramp-down time	1 sec.	-
303	Reverse	-	1	No function	-	0
323	Alarm	-	8	Ready	-	1
400	Manual reset	-	0	Auto reset x 10	-	6
408	ASFM, modulating switch frequency	-	0	LC filter connected	-	2
				LC filter not connected	-	0

* Thermistor function used for thermal protection of LC/RFI filter.

** For information about languages available, see relevant documentation.

*** Use data from the Hydro MPC booster system.

**** 51 Hz for a 50 Hz supply and 61 Hz for a 60 Hz supply.

Factory settings of VLT 6000

To recall the factory settings of all parameters, follow one of the procedures below:

1. Set the parameter 620 to (3).
2. Disconnect the power supply.
3. Reconnect the power supply.
4. All parameters are now factory-set, except the fault log.

or

1. Disconnect the power supply.
2. Press and hold [DISPLAY MODE] + [CHANGE DATA] + [OK] and reconnect the power supply.
3. All parameters are now factory-set, except the fault log.

VLT FC 100

Press [EXTEND MENU] to access all parameters.

Parameter	Factory setting			Grundfos setting		
	Function	Value or number in the display of VLT		Function	Value or number in the display of VLT	
		Value	Number of function		Value	Number of function
001	Language	English	[0]	Language	-**	-
002	Motor speed unit	RPM	[0]	Motor speed unit	Hz	[1]
120	Motor power	-	-	Motor power	-***	-
122	Motor voltage	-	-	Motor voltage	-***	-
123	Motor frequency	50 Hz	-	Motor frequency	-***	-
124	Motor current	-	-	Motor current	-***	-
125	Motor nominal speed	1460 rpm	-	Motor nominal speed	-***	-
190	Motor thermal protection	ETR Trip 1	[4]	Thermistor trip, LC filter connected*	Thermistor trip	[2]
				No thermal protection, LC filter not connected*	No protection	[0]
419	Max. output frequency	100 Hz		Max. output frequency	51 Hz	-
303	Max. reference	50 Hz		Max. reference	-****	-
341	Ramp 1 Ramp Up Time	-	-	Ramp 1 Ramp Up Time	1 sec.	-
342	Ramp 1 Ramp Down Time	-	-	Ramp 1 Ramp Down Time	1 sec.	-
511	Digital input 19	Reversing	[10]	No operation	-	[0]
540	Relay 1	Alarm	[9]	Relay 1	Drive Ready	[2]
	Relay 2	Running	[5]	Relay 2	Control Ready	[1]
1420	Reset mode	Manual reset	[0]	Auto Reset x 10	-	[10]
1401	Switching frequency	4.0 Hz	[6]	Switching frequency	5.0 Hz	[7]
					-	

* Thermistor function used for thermal protection of LC/RFI filter.

** For information about languages available, see relevant documentation.

*** Use data from the Hydro MPC booster system.

**** 51 Hz for a 50 Hz supply and 61 Hz for a 60 Hz supply.

Factory setting of VLT FC 100

To recall the factory settings of all parameters, follow one of the procedures below:

1. Set the parameter 14-22.
2. Press [OK].
3. Select “Initialisation” (for NLCP select “2”).
4. Press [OK].
5. Disconnect the power supply.
6. Reconnect the power supply.
7. All parameters are now factory-set, expect RFI 1, protocol, address, baud rate, minimum response delay, maximum response delay, maximum inter.char delay, operating data, historic log and fault log.

or

1. Disconnect the power supply.
2. Press and hold [STATUS] + [MAIN MENU] + [OK] and reconnect the power supply.
3. All parameters are now factory-set, expect operating hours, the number of power-ups and overtemp’s and overvolt’s.

5.2.4 Step-by step configuration of E-pump(s), if any

Before the Hydro MPC system is ready for test, the E-pumps have to be set.

- Turn on the power supply to the E-pumps by means of the automatic circuit breaker.
- Set with R100 the GENIbus number to the same number as that of the pump.
  (Number = 1 for pump No 1, etc.)

Note: The pumps are numbered from left to right, always starting with the E-pumps.

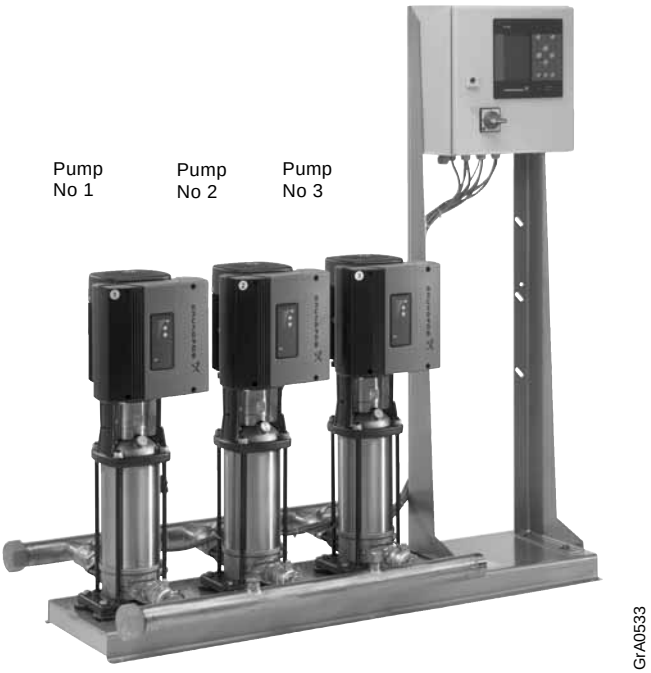


Fig. 20 The pumps are numbered from left to right.

- If a PC with PC Tool E-products is already connected via the service connection on the back of the CU 351, start at point 4.
  If not, start from point 1.
  1. Connect your PC with PC Tool to the service connection on the back of the CU 351.
  2. Start PC Tool E-products.
  3. When communication has been established, the PC Tool ‘Network list’ will display the icons for the pumps installed.
  4. Select the pump you want to configure from the ‘Network list’.
  5. Select the PC Tool function ‘Standard configuration’.
  6. Go to section ‘Search by’ and select ‘Number’.
  7. Find the relevant GSC.file number from table 7.

Application	GSC file number
MGE 1Ph HM2MKII (Model C)	95139670
MGE 3Ph HM3MKII (Model D)	95139671
MGE 3Ph HMLarge (Model F)	95139672

Table 7 : Pumps GSC files

  8. Type the GSC file number in the ‘Configuration No.’ field and click ‘Search Now’.
  9. Select the file from the ‘Configuration files’ field and click ‘Send’.
  10. Repeat points 4 to 9 for each E-pump.

Configuration of the CUE(s) in Hydro MPC, if any

The manufacturer's factory settings of the CUE used in control MPC must be changed to the Control-MPC settings before it is ready to test.

To configure the CUE:

1. Switch off the power supply to the CUE(s) by means of the belonging automatic circuit breaker.
2. Connect the PC-Tool to the GENIbus terminals of the CUE which you want to configure.
3. Turn on the power supply to the CUE.
4. Start the PC-Tool E-products.
5. When communication has been established, the PC Tool ‘Network list’ will display the icon for the CUE.
6. Select the CUE in the 'Network list'.
7. Select the PC Tool function 'Custom configuration'.
8. Go to section 'GENIbus' and set the 'unit number' to the same number as that of the CUE. (Number = 1 for CUE no.1, etc.)
   Note: Point 7 and 8 is not necessary for the CUE in Hydro MPC-F
9. Go to section 'General', select the 'Pump Family' and type the 'Motor' data. See figure 7.
   N.B: "Motor data" to be read from motor's name plate

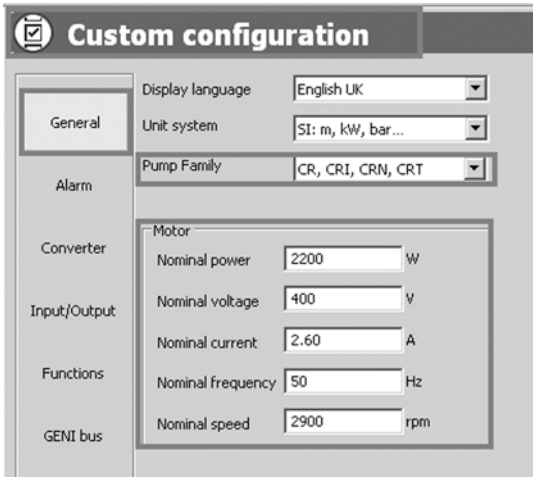


Fig. 21 Select ’Pump Family’ and ’Motor’ from Custom configuration (General)

10. Select the PC Tool function 'Standard configuration'
11. Go to section 'Search by' and select 'Number'.
12. Type the GCS.file number '96890456' in the 'Configuration No.' field and click 'Search Now'.
13. Select the file from the 'Configuration files' field and click 'Send'.
14. Turn on the power supply to the next CUE by the belonging automatic circuit breaker and repeat points 6 to 13 for each CUE.

6. Danfoss frequency converters

For further documentation on Danfoss frequency converters, see the manual supplied with the frequency converter, or download it from http://www.danfoss.com.

7. CUE

Service instructions, see WebCAPS.

Service instructions, extended, see the GTI.

8. MGE

Service instructions, see WebCAPS.

Service instructions, extended, see the GTI.